I CLAIM:

1. A UV air cleaning and disinfecting system comprising:

(a) an enclosed chassis having an inlet/outlet surface panel on one planar side thereof, said surface panel having a longitudinal length and a latitudinal width, said chassis being adapted to be mounted in a space behind a ceiling surface of a room space with its surface panel substantially coplanar with the ceiling surface and facing into the room space;

(b) a pair of inlet vent arrays formed in the inlet/outlet surface panel for taking incoming air into the chassis, said inlet vent arrays being positioned spaced apart on opposite longitudinal sides of the surface panel from each other;

(c) a pair of outlet vent arrays formed in the inlet/outlet surface panel for delivering outgoing air from the chassis, said outlet vent arrays being positioned spaced apart on opposite latitudinal sides of the surface panel from each other; and

(d) said chassis including an air blower unit for taking incoming air into the chassis and delivering outgoing air from the chassis, and an ultraviolet (UV) radiation unit for exposing air taken into the chassis to UV rays sufficient to kill microbes and pathogens therein before it is delivered from the chassis;

(e) wherein said pair of inlet vent arrays positioned on opposite longitudinal sides and said pair of outlet vent arrays positioned on opposite latitudinal sides of the surface panel are operative to establish a pair of longitudinally opposite incoming air streams normal to a pair of latitudinally opposite outgoing air streams which result in four mutually circulating air streams in a four-leaf-clover pattern in the room space.

2. A UV air cleaning and disinfecting system according to Claim 1, wherein for an air blower unit of about 460 cfm throughput, the circulating air streams of the four-leaf-clover pattern obtains in the range of from 2 air changes per hour for a 1,380 sft room with an 8-foot ceiling to 7 air changes per hour for a 260 sft room with a 12-foot ceiling.

3. A UV air cleaning and disinfecting system comprising:

(a) an enclosed chassis having an inlet/outlet surface panel on one planar side thereof, said surface panel having a longitudinal length and a latitudinal width, said chassis being adapted to be mounted in a space behind a ceiling surface of a room space with its surface panel substantially coplanar with the ceiling surface and facing into the room space;

(b) a pair of inlet vent arrays formed in the inlet/outlet surface panel for taking incoming air into the chassis, said inlet vent arrays being positioned spaced apart on opposite longitudinal sides of the surface panel from each other;

(c) a pair of outlet vent arrays formed in the inlet/outlet surface panel for delivering outgoing air from the chassis, said outlet vent arrays being positioned spaced apart on opposite latitudinal sides of the surface panel from each other; and

(d) said chassis including an air blower unit for taking incoming air into the chassis and delivering outgoing air from the chassis, and an ultraviolet (UV) radiation unit for exposing air taken into the chassis to UV rays sufficient to kill microbes and pathogens therein before it is delivered from the chassis;

(e) wherein said chassis has a main chamber with an array of UV lamps arranged longitudinally across the chassis inwardly from the pair of inlet vent arrays and at a lower elevational position of the chassis, the inlet vent arrays is provided with respective ones of a pair of air filters for the incoming air at the opposite longitudinal sides of the chassis, and the air blower unit is provided in the center of the chassis at an upper elevational position from the array of UV lamps.

4. A UV air cleaning and disinfecting system according to Claim 3, wherein the inlet vent arrays are housed in respective intake chambers separated from the main chamber by UV-blocking baffles to direct incoming air entering the inlet vents upwardly in elevational position in the chassis through the air filter then downwardly over the UV lamp array toward the center of the chassis, where it is then entrained by the air blower unit and blown latitudinally outward on opposite sides through the outlet vent arrays in the surface panel, said upward and downward air movements causing air swirling movements for ensuring that pathogens in the incoming air are exposed on many sides thereof to radiation from the UV lamp array.

5. A UV air cleaning and disinfecting system according to Claim 3, wherein said surface panel is formed with a series of cascading door sections to allow wide access across the center of the chassis for maintenance of the UV lamp array.

6. A UV air cleaning and disinfecting system according to Claim 5, wherein said cascading door sections include a first door section adjacent the inlet vent array at one longitudinal end of the chassis positioned on an outward side of the UV-blocking baffle, said first door section being connected to an interlock switch to cutoff electrical power to the UV lamp array and air blower unit when the first door section is opened.

7. A UV air cleaning and disinfecting system according to Claim 4, wherein the UV-blocking baffle has an angled shape and slits at an upper flange thereof facing only toward a front (incoming) side of the air filter for exposing pathogens in the incoming air to UV radiation on the front side of the air filter, as well as after exiting the filter and entering the main chamber.

8. A UV air cleaning and disinfecting system according to Claim 3, wherein said chassis is dimensioned to be retained in the ceiling space on longitudinal and latitudinal rails spaced at industry-standard intervals for holding standard-size ceiling tiles from brackets in a drop ceiling.

9. A UV air cleaning and disinfecting system according to Claim 8, wherein the longitudinal and latitudinal rails are spaced at 4 foot length and 2 foot width intervals.

10. A UV air cleaning and disinfecting system according to Claim 9, wherein said chassis is dimensioned with a 4 x 2 foot surface panel and with a depth dimension of about 8 inches to allow insertion at an angle from below upwardly between the rails into a standard minimum 12-inch depth space of a drop ceiling.

11. A UV air cleaning and disinfecting system according to Claim 9, wherein for an air blower unit of about 460 cfm throughput, the circulating air streams of the four-leaf-clover

pattern obtains in the range of from 2 air changes per hour for a 1,380 sft room with an 8-foot ceiling to 7 air changes per hour for a 260 sft room with a 12-foot ceiling.

12. A UV air cleaning and disinfecting system according to Claim 9, wherein said chassis is equipped with four 10 watt UV lamps, and staphyloccus and streptococcus bacteria are inactivated in a range of 92 to 99 percent or higher.

13. A UV air cleaning and disinfecting system according to Claim 12, wherein mycobaterium tuberculosis is inactivated in a range of 87 to over 99 percent.

14. A UV air cleaning and disinfecting system according to Claim 12, wherein bacillus anthracis spores is inactivated in a range of over 90 percent.

15. A UV air cleaning and disinfecting system according to Claim 9, wherein said chassis is equipped with four 14.5 watt UV lamps, and staphyloccus and streptococcus bacteria are inactivated in a range of 94 to 99 percent or higher.

16. A UV air cleaning and disinfecting system according to Claim 15, wherein mycobaterium tuberculosis is inactivated in a range of 89 to over 99 percent.

17. A UV air cleaning and disinfecting system according to Claim 15, wherein bacillus anthracis spores is inactivated in a range of over 92 percent.

18. A UV air cleaning and disinfecting system according to Claim 3, wherein said air blower unit has a center-placed backward-curved motorized impeller, which causes the incoming air stream to be split into two paths, comprising of two intake air streams and two return air streams.

19. A UV air cleaning and disinfecting system according to Claim 7, wherein the slits in the UV-blocking baffle are covered by fused silica shields and positioned such that ultraviolet light passing through these shields is focused on and directed at the front side of the filter.

20. A UV air cleaning and disinfecting system according to Claim 7, wherein the UV-blocking baffle also provides a horizontal mounting surface for holders for the UV lamp array.